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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,154	02/19/2004	John A. Dickson	370004-00005 (02-3680)	1875

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ALCOA CENTER, PA 15069-0001

EXAMINER

MORILLO, JANEL COMBS

ART UNIT	PAPER NUMBER
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1742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/783,154

Applicant(s)

DICKSON ET AL.

Examiner

Janelle Combs-Morillo

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/12/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-23 and 25-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-23 and 25-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-6, 8-10, 12-18, 21, 23, 25-31, 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedyk (US 5,911,844).

Benedyk teaches a method of forming age hardenable aluminum alloys by providing a tempered aluminum alloy in an extruded profile or rolled sheet form (column 3 line 8-9), applying a retrogression heat treatment to a localized region (column 2 lines 19-20) said retrogression heat treatment including heating to provide adequate softening and water or fluid quenching to room temperature (column 3 lines 46-53); forming said softened material by drawing, punching, or stamping (column 3 lines 17, 65-66) to form the desired shape, natural or artificial aging to exceed the original hardness of the material (column 4 lines 1-4).

Though Benedyk does not teach starting with a T4 type temper- but rather teaches starting with stronger/harder tempers T5 or T6 (which meets cl. 23). However, it would have been obvious to one of ordinary skill in the art to apply the process of retrogressive heat treating to a T4 tempered aluminum alloy, because Benedyk teaches said process greatly improves formability, and wherein the formability achieved by said retrogressive heat treating considerably exceeds that of a traditional T4 temper (Table 1, column 4 lines 60-67).

Art Unit: 1742

Though Benedyk does not specify the forming of splines on a tube of said alloy, Benedyk teaches that said retrogressive heat treatment is beneficial for forming extrusions by drawing, punching, or stamping (column 3 lines 17, 65-66) to any desired shape. Therefore it is held to be within the disclosure of Benedyk to form extruded or rolled profiles, including tubes, by stamping (including stamping splines), because Benedyk teaches said process greatly improves the ductility and formability (column 4 line 65).

Concerning amended claims 1 and 23, and claims 3, 25, Benedyk teaches that said process is applied to aluminum alloys, such as AA6061.

Concerning claims 4-6, 26-28, 34, as stated above, it is held to be within the disclosure of Benedyk to form extruded, rolled, or drawn profiles, including seam and seamless tubes, by stamping splines.

Concerning claim 10, though Benedyk teaches heating a localized region, it is within the scope of Benedyk to apply said heat treatment over any given length of the aluminum tube, such as >90% of the tube length, by appropriately scaling the size of the tube to the heating unit. Changes in size, shape, or sequence of adding ingredients is prima facie obvious. Mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled.” 531 F.2d at 1053, 189 USPQ at 148, see also MPEP 2144.04.

Concerning claims 8, 9, 12 and 13, as stated above, Benedyk teaches heating only a localized region with an induction coil/ heating unit (column 3 lines 31-35).

Concerning claims 14-18, 30, as stated above, Benedyk teaches quenching to room temperature via water quenching (column 3 lines 52-53).

Concerning claim 21, 31, and 35, Benedyk does not mention aging below room temperature in order to retard natural aging, or aging to achieve T4 conditions. However, changes in concentration or temperature will generally not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical, i.e. they produce a new and unexpected result. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In the instant case, aging at a given temperature is held to be a result effective variable, wherein the expected result is degree of precipitation.

Concerning claim 29, Benedyk teaches said alloy is in a T5 or T6 temper, which meets said direct quench or separate solution heat treating step limitations.

Concerning claim 36, Benedyk teaches aging to achieve T6 properties (column 6 lines 5-6).

3. Claims 7, 19, 20, 22, 32, 33, 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedyk (US 5,911,844) in view of "Aluminum and Aluminum Alloys" p 305, 311, 319, 462-463.

Concerning claim 7, Benedyk does not mention the temperature said alloy is heated to, but teaches the purpose of said heat treatment is to soften the metallic material for the step of forming (column 2 lines 10-12). "Aluminum and Aluminum Alloys" teaches that softening or annealing takes place at typically 500-825°F, which significantly overlaps the presently claimed heat treatment range. It would have been obvious to one of ordinary skill in the art to heat treat at temperatures of 500-825°F, as taught by "Aluminum and Aluminum Alloys" to provide

Art Unit: 1742

softening, because Benedyk teaches that the purpose of said heat treatment step is to soften the metallic material in preparation for the step of forming.

Concerning claims 19, 20, 32, 33, “Aluminum and Aluminum Alloys” teaches that “because precipitation hardening will occur at room temperatures, forming or straightening usually follows as soon after quenching as possible” (p. 305, 3rd column). It would have been obvious to one of ordinary skill in the art to form ≤ 8 hrs after quenching because “Aluminum and Aluminum Alloys” teaches that the alloy material is the most ductile/greater formability immediately after quenching.

Concerning claim 22 and 37, “Aluminum and Aluminum Alloys” teaches at p 311 that precipitation heat treatments/aging typically occurs at temperatures 240-375 °F for 5-48 hrs, and wherein T6 tempers have the highest strength properties (p 311, column 1, 3). It would have been obvious to one of ordinary skill in the art to perform the process of retrogressive heat treating taught by Benedyk, with a final artificial aging at temperatures of 240-375 °F to provide a near T6 temper, because “Aluminum and Aluminum Alloys” teaches that said temperature range is useful for creating precipitation hardening effect in heat treatable aluminum alloys, and T6 tempers have the highest practical strength (p 311).

Concerning claims 38 and 39, Benedyk does not teach an anodizing layer is applied to said material. However, “Aluminum and Aluminum Alloys” teaches that anodizing layers are applied, such as a coatings $\geq 25 \mu\text{m}$ (p 463, 2nd column) thick, in order to increase corrosion resistance (p 462) and increase paint adhesion (p 463). It would have been obvious to one of ordinary skill in the art to form an anodizing layer on the tube material taught by Benedyk,

Art Unit: 1742

because "Aluminum and Aluminum Alloys" teaches said layer is beneficial to increase corrosion resistance (p 462).

4. Claim 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benedyk (US 5,911,844) in view of Benoit et al (US 6,452,139).

Benedyk does not teach rotating the metallic tube during heating. However, Benoit, who is also drawn to a retrogressive heat treatment, teaches rotating the tube while heat treating improves the consistency/homogeneousness of the heat treatment (column 2 lines 65-66). It would have been obvious to one of ordinary skill in the art to perform the process of retrogressive heat treating taught by Benedyk, and further rotating the tube while heating as taught by Benoit, because Benoit teaches rotating the tube while heat treating improves the consistency/homogeneousness of the heat treatment.

Response to Amendment/Arguments

5. In the response filed on October 12, 2006 applicant amended claims 1, 3, 4, 23, 25, canceled claims 2 and 24, and submitted various arguments traversing the rejections of record. No new matter has been added. Applicant has overcome the 112 first paragraph rejection.

6. The terminal disclaimer filed on October 12, 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of serial number 10/772733 has been reviewed and is accepted. The terminal disclaimer has been recorded.

7. Applicant's argument that the present invention is allowable over the prior art of record because the prior art T4 products can develop cracks during forming, and because the prior art

Art Unit: 1742

does not teach a method for forming and heat treating substantially as presently claimed has not been found persuasive. Though the prior art of Benedyk is directed to removing T5 or T6 heat treatment in order to enhance formability, Benedyk teaches that said retrogressive heating additionally improves formability with regard to a T4 temper (column 4 lines 60-63). It would have been obvious to one of ordinary skill in the art to apply the process of retrogressive heat treating to a T4 tempered aluminum alloy, because Benedyk teaches said process greatly improves formability, and wherein the formability achieved by said retrogressive heat treating considerably exceeds that of a traditional T4 temper (Table 1, column 4 lines 60-67).

8. Applicant's argument that the present invention is allowable over the prior art of record because the instant process achieves greater stability and therefore unexpectedly low cracking of splines has not been found persuasive. Applicant has not clearly shown specific unexpected results with respect to the prior art of record or criticality of the instant claimed range (wherein said results must be fully commensurate in scope with the instantly claimed ranges, etc. see MPEP 716.02 d). Evidence of unexpected properties may be in the form of a direct or indirect comparison of the claimed invention with the closest prior art which is commensurate in scope with the claims. See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP §716.02(d) - § 716.02(e).

9. Applicant's argument that the present invention is allowable over the prior art of record because Benedyk does not teach the instant method of increasing the stability of a T4 temper material has not been found persuasive. Benedyk does provide motivation to apply a retrogressive heat treatment, as stated above. Applicant has not clearly shown unexpected results.

Art Unit: 1742

10. Applicant's argument that the present invention is allowable over the prior art of record because Benedyk does not teach or suggest a method of controlling time and or temperature so that a T4 temper is not achieved (cl. 23) has not been found persuasive. Benedyk teaches forming a T5 or T6 temper and thereafter retrogressively heat treating, forming, and aging.

11. With respect to applicant's argument that natural aging time is critical, it is unclear if the results are unexpected. "Aluminum and Aluminum Alloys" teaches that "because precipitation hardening will occur at room temperatures, forming or straightening usually follows as soon after quenching as possible" (p. 305, 3rd column). It would have been obvious to one of ordinary skill in the art to form ≤ 8 hrs after quenching because "Aluminum and Aluminum Alloys" teaches that the alloy material is the most ductile/greater formability immediately after quenching.

12. Applicant's argument that the present invention is allowable over the prior art of record because "Aluminum and Aluminum Alloys" is far removed for applicant's method has not been found persuasive. "Aluminum and Aluminum Alloys" is cited for general heat treatment and forming teachings well known in the art, and motivation to apply such treatments, as stated above.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

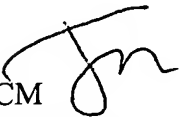
Art Unit: 1742

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCM 
December 21, 2006


ROY KING
SUPERVISORY PATENT EXAMINER
ELECTRONIC BUSINESS CENTER